

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF PENNSYLVANIA**

LAMBETH MAGNETIC STRUCTURES,
LLC,

Plaintiff,

v.

WESTERN DIGITAL CORPORATION,
WESTERN DIGITAL TECHNOLOGIES,
INC., WESTERN DIGITAL (FREMONT),
INC., WESTERN DIGITAL (THAILAND)
COMPANY LIMITED, WESTERN
DIGITAL (MALAYSIA) SDN.BHD, and
HGST, Inc.

Defendants.

CIVIL ACTION NO. _____

COMPLAINT AND DEMAND FOR TRIAL BY JURY

Plaintiff Lambeth Magnetic Structures, LLC. with a principal place of business at 1230 Squirrel Hill Avenue, Pittsburgh, PA 15217 (“LMS”), alleges the following for its complaint against defendants Western Digital Corporation, Western Digital Technologies, Inc., Western Digital (Fremont), Inc., Western Digital (Thailand) Company Ltd., and Western Digital (Malaysia) SDN.BHD (collectively “Western Digital”), and HGST, Inc. (“HGST”).

NATURE OF THE ACTION

1. This is a civil action for infringement of United States Patent No. 7,128,988 (the “‘988 Patent”). The action arises under the laws of the United States related to patents, including 35 U.S.C. § 281.

PARTIES

2. LMS is a limited liability company organized and existing under the laws of Pennsylvania, having its principal place of business at 1230 Squirrel Hill Avenue, Pittsburgh, PA 15217.

3. Upon information and belief, Western Digital Corporation is a Delaware corporation with its principal place of business at 3355 Michelson Drive, Suite 100, Irvine, CA 92612.

4. Upon information and belief, Western Digital Technologies, Inc. is a Delaware corporation with its principal place of business at 3355 Michelson Drive, Suite 100, Irvine, CA 92612. Upon information and belief, Western Digital Technologies is a wholly owned subsidiary of Western Digital Corporation.

5. Upon information and belief, Western Digital (Fremont), Inc. is a Delaware corporation with its principal place of business at 44100 Osgood Rd, Fremont, CA 94539. Upon information and belief, Western Digital (Fremont), Inc. is a directly or indirectly wholly owned subsidiary of Western Digital Corporation, and it is involved in the research, development and fabrication of hard drive test systems, and heads for incorporation into hard drives.

6. Upon information and belief, Western Digital (Thailand) Company Ltd. is a company organized under the laws of Thailand with its principal place of business at 140 Khlong Chik Bang Pa-in District, Phra Nakhon Si Ayutthaya 13160, Thailand. Upon information and belief, Western Digital (Thailand) Company Ltd. is directly or indirectly wholly owned subsidiary of Western Digital Corporation, and it is an agent for Western Digital Corporation, and is responsible for the manufacture of hard drives for Western Digital.

7. Upon information and belief, Western Digital (Malaysia) SDN.BHD is a company organized under the laws of Malaysia with its principal place of business at Lot 3Jalan SS 8/6, Sungei Way FIZ, Petaling Jaya, 47300, Petaling Jaya, Selangor, Malaysia. Upon information and belief, Western Digital (Malaysia) SDN.BHD is a directly or indirectly wholly owned subsidiary of Western Digital Corporation, and it is an agent for Western Digital Corporation, and is responsible for the manufacture of hard drives for Western Digital.

8. Upon information and belief, HGST is a Delaware corporation with its principal place of business at 3403 Yerba Buena Road, San Jose, CA 95135. HGST is a fully owned subsidiary of Western Digital Corporation.

JURISDICTION AND VENUE

9. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a), because this action concerns infringement of a United States patent.

10. This Court has personal jurisdiction over Western Digital at least by virtue of Western Digital regularly transacting or soliciting business in this District, and having committed one or more acts of infringement in this District. For example, through its website, store.wdc.com, Western Digital sells infringing hard drives directly to consumers throughout the United States, and in this District.

11. This Court has personal jurisdiction over HGST at least by virtue of Western Digital regularly transacting or soliciting business in this District, and having committed one or more acts of infringement in this District. For example, through its website, HGST.com/how-to-buy, HGST directs consumers throughout the United States and in this District to online retailers who sell and ship its infringing products throughout the United States and in this District.

12. Venue is proper under 28 U.S.C. §§ 1391 and 1400.

BACKGROUND

13. LMS is an entity formed to license patents invented by Dr. David N. Lambeth, a retired Carnegie Mellon professor and recognized pioneer in the area of materials science, and magnetic devices, specifically magnetic structures and devices for computer memory devices, including electronic hard disk drives (also referred to herein as “magnetic disk drives” or “HDD”).

14. The ‘988 Patent, entitled “Magnetic Material Structures, Devices and Methods,” was issued on October 31, 2006. (A copy of the ‘988 Patent is attached hereto as Exhibit A)

15. By assignment, LMS is the current owner of ‘988 Patent, which has the right to sue and recover damages for infringement thereof.

16. The accurate storage and retrieval of data are critical to our information age. Every year, the amount of data that needs to be stored grows exponentially, requiring more and more capacity for individuals and companies alike. Much of the data are stored on hard disk

drives, both those that are internal to computers, and stand-alone external drives. Hence, hard disk drive capacity continually needs to be increased.

17. The shrinking of the physical size of the datum unit on the storage medium is essential to accommodate the growing need for data storage without increasing the physical size of the hard drives themselves. If data density were to not have increased over the years, it would have taken hard disk drives the size of a house to store a small music library. In order for this density to be continually increased the HDD magnetic medium must be sufficiently resistant to spontaneous changes of magnetic state. These materials are sometimes referred to as being magnetically hard, or having a high coercivity (resistance to change).

18. The magnetic head (transducer) used to record the data in HDD is composed of various materials and structures, which play a vital role in determining the hard disk drive storage capacity. It is important that the structures be as small as possible and the materials be sufficiently potent to perform the required function of changing the states of the very small areas of the hard magnetic material on the platter, *i.e.*, magnetic media or disk, when energized. At the same time, these transducer materials must be sufficiently magnetically soft such that they relax to a non-magnetized state and do not cause erasure of the data when the transducer is not energized. This changing of the magnetized state on the magnetic disk, platter, is equivalent to modifying or writing the 0's and 1's representing data stored on the platter.

19. For ease of reference, but without limitation, as used herein, the reference to "Hard Disk Drive Devices" shall include computers, electronic equipment, and hard disk drives with magnetic heads and perpendicular magnetic recording media, including but not limited to: hard disk drives, including hard disk drives for inclusion in computers; stand-alone drives and portable drives; laptop and desktop computers with hard disk drives; media players and sound or video recording devices with hard disk drives; gaming systems with hard disk drives; servers and enterprise storage computers; hard disk drive storage devices in automotive vehicles and machinery; and other devices with hard disk drives, including the components such as recording heads and media for such drives.

20. In connection with the '988 Patent, Dr. Lambeth invented a new magnetic material structure for Hard Disk Drive Devices including the following elements:

- (1) a substrate;
- (2) at least one bcc-d layer which is magnetic, forming a uniaxial symmetry broken structure; and
- (3) at least one layer providing a (111) textured hexagonal atomic template disposed between said substrate and said bcc-d layer.

21. Independent claim 1 of the '988 Patent claims the new magnetic material structure set forth above while independent claim 27 claims a magnetic device incorporating the new structure.

22. This new magnetic structure allowed Hard Disk Drive Devices with greater capacity than before, but without an increase in their physical size. Thus, this structure was and continues to be instrumental to the ever-increasing miniaturization of computers and the concomitant increase of data storage capacity.

FIRST CALIM FOR RELIEF

Patent Infringement of United States Patent No. 7,128,988 By Western Digital

23. The allegations stated in paragraphs 1-22 are incorporated by reference as though fully set forth herein.

24. Western Digital designs and manufactures recording heads for high performance hard disk drives, which infringe the '988 Patent. The following are just a few infringing Western Digital models: 1TB HDD Model No.: WD10JPVX, which is representative of other Western Digital HDDs and solid state hybrid drives ("SSHD"), including, *inter alia*, internal PC/Mac desktop HDDs Model Nos. WD60EZRZ, WD50EZRZ, WD40EZRZ, WD30EZRZ, WD20EZRZ, WD10EZRZ, WD10EZEX, WD7500AZEX, WD5000AZLX, WD5000AAKX, WD3200AAKX, and WD2500AAKX; WD6001FZWX, WD5001FZWX, WD4003FZEX, WD3003FZEX, WD2003FZEX, WD1003FZEX, WD5003AZEX, WD4001FAEX, WD3001FAEX, WD2002FAEX, WD1002FAEX; internal PC/Mac SSHD Model Nos. WD40E31X, WD10J31X; internal mobile HDD Model Nos. WD10SPCX, WD7500LPCX, WD5000LPCX, WD3200LPCX, WD2500LPCX, WD30NPVZ, WD20NPVZ, WD15NPVZ, WD7500BPKX,

WD5000LPVX, WD3200LPVX, and WD2500LPVX; internal mobile SSHD Model Nos. WD40E31X and WD10J31X; Network Attached Storage (“NAS”) HDDs, including Model Nos. WD80EFZX, WD60EFRX, WD50EFRX, and WD10JFCX; Datacenter Capacity HDDs, including Model Nos. WD6002FRYZ, WD5001FXYZ, WD6001FSYZ, WD2004FBYZ, WD3000FYYZ, WD200MFYYZ, WD5003ABYZ, WD1001FYYG, WD6001F9YZ, WD2000F9YZ, WD4000F9YZ, and WD6001F4PZ; gaming storage for Xbox Model No. WDBCRM0020BBK; External HDDs and SSHDs for PCs and Macs, including Model Nos., WDBFJK0080HBK, WDBFJK0020HBK, WDBLWE0160JCH, WDBLWE0060JCH, WDBLWE0040JCH, WDBWLG0050HBK, WDBWLG0020HBK, WDBYCC0080HBK, WDBYCC0040HBK, WDBYCC0020HBK, WDBHML0040HAL, WDBHML0030HAL, WDBHML0020HAL, WDBUTV0080JSL, WDBUTV0040JSL, WDBDTB0160JSL, WDBDTB0100JSL, WDBDTB0060JSL; external portable hard drives for PC and Mac, including Model Nos. WDBU6Y0020BBK, WDBUZG0010BBK, WDBUZG5000ABK, WDBMWV0020BBK, WDBPGC5000ABK, WDBBUZ0020BBL, WDBMWV0020BRD, WDBLNP5000ARD, WDBPGC5000ATT, WDBEZW0030BBA, WDBEZW0020BCG, and WDBTYH0010BSL; and kits including any of these HDDs or SSHDs (hereinafter referred to as “Accused Western Digital Drives”).



25. Each of the Accused Western Digital Drives includes at least one magnetic hard disk along with at least one recording head for writing data to the surface(s) of the magnetic hard disk.

26. Each of the Accused Western Digital Drives includes at least one recording head made from Dr. Lambeth's new magnetic material structure. In particular, each of the Accused Western Digital Drives includes a magnetic material structure with the following elements (or equivalents thereto):

- a substrate;
- at least one bcc-d layer which is magnetic, forming a uniaxial symmetry broken structure; and
- at least one layer providing a (111) textured hexagonal atomic template disposed between said substrate and said bcc-d layer.

27. More specifically, the Accused Western Digital Drives use a magnetic layer made from at least iron cobalt (Fe,Co) or an FeCo alloy having a bcc-d structure and forming a uniaxial symmetry broken structure as claimed in the '988 patent.

28. The Accused Western Digital Drives also use at least one layer of material made from Ruthenium (Ru) or some other seedlayer material, disposed between a substrate in the recording head and Dr. Lambeth's magnetic layer having a uniaxial symmetry broken structure, as set forth above. This material facilitates the formation of Dr. Lambeth's magnetic layer by providing a (111) textured hexagonal atomic template as claimed in the '988 patent.

29. The magnetic material structures used in the Accused Western Digital Drives infringe at least claims 1 and 27 of the '988 patent, and dependent claims thereof, including claims 3, 6, 8, 17, 19, 28, and 29, literally or under the doctrine of equivalents. Therefore, Western Digital's hard disk drives, and specifically, its magnetic recording heads, which incorporate these infringing structures, also infringe at least claims 1 and 27 of the '988 patent, and dependent claims thereof, including claims 3, 6, 8, 17, 19, 28, and 29.

30. Western Digital imports, makes, uses, sells, and offers to sell these magnetic heads. Therefore, Western Digital is in violation of 35 U.S.C. § 271(a), and has been and continues to directly infringe at least claims 1 and 27 of the '988 Patent, and dependent claims thereof, including claims 3, 6, 8, 17, 19, 28, and 29, literally or under the doctrine of equivalents, by making, using, selling, offering to sell, and/or importing magnetic heads that are incorporated in Hard Disk Drive Devices that are sold in the United States and this District, including but not limited to laptop computers, desktop computers (including Apple iMac), Xbox and Playstation game consoles, and servers.

31. LMS has been damaged by Western Digital's infringement of the '988 Patent, and is suffering and will continue to suffer irreparable harm and damage as a result of this infringement unless such infringement is enjoined by this Court.

32. This action, therefore, is "exceptional" within the meaning of 35 U.S.C. § 285.

SECOND CALIM FOR RELIEF
Patent Infringement of United States Patent No. 7,128,988
By HGST and Western Digital Corporation

33. The allegations stated in paragraphs 1-32 are incorporated by reference as though fully set forth herein.

34. HGST designs and manufactures recording heads for high performance hard disk drives, which infringe the '988 Patent. The following are just a few infringing HGST models: 1TB HDD Model No.: H2T10003272S, which is representative of other HGST HDDs, including, *inter alia*, all 10TB and 8TB Ultrastar He10 models (both SATA and SAS models) including

Model	Nos.	HUH721010ALE600,	HUH721008ALE600,	HUH721010ALN600,
		HUH721008ALN600,	HUH721010ALE601,	HUH721008ALE601,
		HUH721010ALN601,	HUH721010ALE604,	HUH721008ALE604,
		HUH721010ALN604,	HUH721010AL4200,	HUH721008AL4200,
		HUH721008AL5200,	HUH721010AL4201,	HUH721008AL4201,
		HUH721008AL5201,	HUH721010AL4204,	HUH721008AL4204,
				HUH721010AL5204,

HUH721008AL5204, HUH721010AL4205, HUH721008AL4205, HUH721010AL5205, and HUH721008AL5205; all 8TB and 6TB Ultrastar He8 models (both SATA and SAS models) including Model Nos. HUH728080AL4200, HUH728060AL4200, HUH728080AL5200, HUH728060AL5200, HUH728080AL4201, HUH728060AL4201, HUH728080AL5201, HUH728060AL5201, HUH728080AL4204, HUH728060AL4204, HUH728080AL5204, HUH728080ALE600, HUH728060ALE600, HUH728080ALN600, HUH728060ALN600, HUH728080ALE601, HUH728080ALN601, HUH728080ALE604, HUH728060ALE604, and HUH728080ALN604; all 6TB Ultrastar He6 models (both SATA and SAS models) including Model Nos. HUS726060ALS640, HUS726060ALS641, HUS726060ALa640, and HUS726060ALA641; all 10TB Ultrastar Archive Ha10 models (both SATA and SAS models) including HMH7210A0ALE600, HMH7210A0ALE601, HMH7210A0ALE604, HMH7210A0ALN600, HMH7210A0ALN601, HMH7210A0ALN604, HMH7210A0AL4600, HMH7210A0AL4601, and HMH7210A0AL4604; all 6TB, 5TB, 4TB, and 2TB Ultrastar 7K6000 models (both SATA and SAS models) including Model Nos. HUS7260xxALN61y, HUS7260xxALE61y, HUS7260xxALA61y, HUS7260xxAL421y, HUS7260xxAL521y, and HUS7260xxALA621y; all 2TB, 3TB, and 4TB Ultrastar 7K4000 models (both SATA and SAS models) including Model Nos. HUS724040ALE640, HUS724030ALE640, HUS724020ALE641, HUS724020ALA640, HUS724040ALS641, HUS724030ALS640, HUS724030ALS641, and HUS724020ALS641; All 1TB and 500GB Ultrastar A7K2000 models, including Model Nos. HUA722010CLA630, and HUA722050CLA630; All 1TB Ultrastar C7K1000 models, including Model Nos. HUC721010ASS600, and HUC721010ASS601; all 4TB MegaScale DC 4000.B models, including Model Nos. HMS5C4040BLE640, and HMS5C4040BLE641; all 1.8TB, 1.2TB, 900 GB, 600GB and 450GB Ultrastar C10K1800 models, including Model Nos. HUC101812CSS20x, HUC101890CSS20x, HUC101860CSS20x, HUC101818CS420x, HUC101812CS420x, HUC101890CS420x, and HUC101860CS420x; all 1.2TB Ultrastar C10K1200 models, including Model Nos. HUC101212CSS600, and HUC101212CSS601; all 900GB, 600GB, and 450GB Ultrastar C10K900 models, including Model Nos.

HUC109090CSS600, HUC109090CSS601, HUC109060CSS600, HUC109060CSS601, HUC109045CSS600, and HUC109045CSS601; all 600GB and 450GB Ultrastar C15K600 models, including Model Nos. HUC156060CS420x, HUC156045CS420x, HUC156060CSS20x, and HUC156045CSS20x; all 500GB Travelstar Z7500 models, including Model Nos. HTS725050A7E630, HTS725050A7E631, HTS725050A7E635, and HTE725050A7E630; all 1TB and 750GB Travelstar Z5K1000 models, including Model Nos. HTS541010A7E630, HTS541010A7E631, HTS541075A7E630, and HTS541075A7E63; all 1TB, 750GB, and 640GB Travelstar 5K1000 models, including Model Nos. HTS541010A9E680, HTS541075A9E680, HTS541064A9E680, HTS541010A9E681, HTS541075A9E681, HTS541064A9E681, HTE541010A9E680, HTE541075A9E680, and HTE541064A9E680; all 1TB and 750GB Travelstar 7K1000 models, including Model Nos. HTS721010A9E630, HTS721010A9E631, HTS721075A9E630, HTS721075A9E631, and HTE721010A9E630; all 500GB CinemaStar Z5K500 models, including Model No. HCC725050A7E630; all 1TB, 750GB, and 640GB CinemaStar Z5K100 models, including Model No. HCC545050A7E630; and all kits including any of these HDDs, including Performance Drive Kits, NAS Desktop Drive Kits, Desktop Drive Kits, and Mobile Drive Kits (Hereinafter referred to as “Accused HGST Drives”).



35. Each of the Accused HGST Drives includes at least one magnetic hard disk along with at least one recording head for writing data to the surface(s) of the magnetic hard disk.

36. Each of the Accused HGST Drives includes at least one recording head made from Dr. Lambeth's new magnetic material structure. In particular, each of the Accused HGST Drives includes a magnetic material structure with the following elements (or equivalents thereto):

- a substrate;
- at least one bcc-d layer which is magnetic, forming a uniaxial symmetry broken structure; and
- at least one layer providing a (111) textured hexagonal atomic template disposed between said substrate and said bcc-d layer.

37. More specifically, the Accused HGST Drives use a magnetic layer made from at least iron cobalt (Fe,Co) or an FeCo alloy having a bcc-d structure and forming a uniaxial symmetry broken structure as claimed in the '988 patent.

38. The Accused HGST Drives also use at least one layer of material made from Nickel (Ni), Nickel alloy, or some other seedlayer material, disposed between a substrate in the recording head and Dr. Lambeth's magnetic layer having a uniaxial symmetry broken structure, as set forth above. This material facilitates the formation of Dr. Lambeth's magnetic layer by providing a (111) textured hexagonal atomic template as claimed in the '988 patent.

39. The magnetic material structures used in the Accused HGST Drives infringe at least claims 1 and 27 of the '988 patent, and dependent claims thereof, including claims 6, 7, 9, 11, and 13, literally or under the doctrine of equivalents. Therefore, HGST's hard disk drives, and specifically, its magnetic recording heads, which incorporate these infringing structures, also infringe at least claims 1 and 27 of the '988 patent, and dependent claims thereof, including claims 6, 7, 9, 11, and 13.

40. HGST imports, makes, uses, sells, and offers to sell these magnetic heads. Therefore, HGST is in violation of 35 U.S.C. § 271(a), and has been and continues to directly infringe at least claims 1 and 27 of the '988 Patent, and dependent claims thereof, including

claims 6, 7, 9, 11, and 13, literally or under the doctrine of equivalents, by making, using, selling, offering to sell, and/or importing magnetic heads that are incorporated in Hard Disk Drive Devices that are sold in the United States and this District, including but not limited to laptop computers, desktop computers (including Apple and PC), and servers.

41. LMS has been damaged by HGST's infringement of the '988 Patent, and is suffering and will continue to suffer irreparable harm and damage as a result of this infringement unless such infringement is enjoined by this Court.

42. This action, therefore, is "exceptional" within the meaning of 35 U.S.C. § 285.

JURY DEMAND

43. LMS hereby demands a jury trial on all issues so triable.

REQUESTED RELIEF

WHEREFORE, LMS demands judgment as follows:

- A. An order adjudging Western Digital and HGST to have infringed the '988 Patent;
- B. A permanent injunction enjoining Western Digital and HGST with its respective officers, agents, servants, employees, and attorneys, and all persons in active concert or participation with any of them who receive actual notice of the order by personal service or otherwise, from infringing the '988 Patent;
- C. That this case is "exceptional" within the meaning of 35 U.S.C. § 285;
- D. A full accounting for and an award of damages to LMS for Western Digital's and HGST's infringement of the '988 Patent, including with pre- and post-judgment interest;
- E. An award of LMS's reasonable attorneys' fees, expenses, and costs; and
- F. A grant of such other and further equitable or legal relief as this Court deems proper.

Respectfully submitted,

THE WEBB LAW FIRM

Dated: May 2, 2016

s/ John W. McIlvaine

John W. McIlvaine (PA ID No. 56773)
Christian D. Ehret (PA ID No. 311984)
One Gateway Center
420 Ft. Duquesne Blvd., Suite 1200
Pittsburgh, PA 15222
412.471.8815
412.471.4094 (fax)
jmcilvaine@webblaw.com
cehret@webblaw.com

David C. Radulescu, Ph.D.
Tigran Vardanian
Etai Lahav
Maria Granovsky, Ph.D.
Michael Sadowitz
RADULESCU LLP
The Empire State Building
350 Fifth Ave., Suite 6910
New York, NY 10118
T: (646) 502-5950
F: (646) 502-5959
david@radulescullp.com
tigran@radulescullp.com
etai@radulescullp.com
maria@radulescullp.com
mike@radulescullp.com

***Counsel for Plaintiff Lambeth Magnetic
Structures, LLC***